CLAIMS

1. A method for producing a structure on a substrate comprising the steps of

depositing drops of a suspension of nanoparticles of a material in a liquid by means of a droplet generator,

melting the nanoparticles of the deposited drops at least partially by exposition to laser light and

solidifying the molten nanoparticles for forming the structure.

2. The method of claim 1 further comprising the steps of

directing the laser light to a curing point on the substrate and

translating the curing point in respect to the substrate.

3. The method of claim 1 further comprising the steps of

depositing the drops at a drop-off point on said substrate and

translating the drop-off point in respect to the substrate.

4. The method of claim 1 further comprising the steps of

directing the laser light to a curing point on the substrate,

depositing the drops at a drop-off point on said substrate, and

translating the curing point and the drop-off point in respect to the substrate.

5. The method of claim 4 wherein the curing point and the drop-off point coincide.

6. The method of claim 4 wherein the curing point and the drop-off point are located at a distance from each other.

7. The method of claim 1 comprising the step of generating the drops by compressing a volume of the suspension and thereby squirting the drops through an opening onto the substrate.

8. The method of claim 1 wherein the liquid is selected from the group comprising toluene, terpineol, xylene and water.

9. The method of claim 1 wherein an exponential absorption coefficient of the laser light in the suspension is at least 0.1 μm^{-1}, in particular at least 1 μm^{-1}.

10. The method of claim 1 wherein the suspension is deposited as a layer on the substrate and wherein at least 80% of the laser light is absorbed in the layer.

11. The method of claim 1 wherein the nanoparticles are of a metal.

12. The method of claim 1 wherein the liquid comprises toluene and the nanoparticles comprise gold.

13. The method of claim 1 wherein an average diameter of the nanoparticles is sufficiently small for reducing a melting point of the nanoparticles substantially below a bulk melting point of the material

14. The method of claim 1 wherein an average diameter of the nanoparticles is less than 100 nm, in particular less than 10 nm, preferably between 1 nm and 5 nm.

15. The method of claim 1 wherein the structure is a superconductor.

16. The method of claim 1 wherein an intensity distribution of the laser light at the curing point is non-Gaussian.

17. The method of claim 1 wherein an intensity distribution of the laser light at the curing point has at least two spatially separated maxima.

18. The method of claim 1 comprising the step of depositing said drops along a line strip on said substrate, wherein an intensity distribution of the laser light at the curing point has a local minimum on a center line of said line strip.

19. The method of claim 1 comprising the steps of

depositing said drops along a line strip on said substrate,

directing at least two laser beams onto said substrate at said curing point, said laser beams impinging on opposite sides of a center line of said line strip.

20. The method of claim 1 comprising the step of repetitively pulsing said laser light.

21. The method of claim 1 comprising the step of evaporating at least part of said liquid after depositing said drops and before bringing said nanoparticles into contact with said laser light.

22. The method of claim 1 comprising the step of heating said substrate by a means separate from said laser light.

23. The method of claim 1 wherein said substrate is transparent for said laser light.

24. The method of claim 1 further comprising the step of generating, above or below said structure, a structured polymer layer by

depositing drops of a polymerizable liquid, and

polymerizing said drops of deposited polymerizable liquid.

25. The method of claim 24, wherein said drops of deposited polymerizable liquid are polymerized using UV radiation.

26. A method for producing a structure on a substrate comprising the steps of

depositing drops of a suspension of nanoparticles of a material in a liquid onto said substrate,

illuminating a curing point on said substrate by laser light,

at least partially melting the nanoparticles of the deposited drops in said curing point and

solidifying the molten nanoparticles for forming the structure.

27. A method for producing a structure on a substrate comprising the steps of

depositing a layer of a suspension of nanoparticles of a material in a liquid onto said substrate,

illuminating a curing point on said substrate by laser light having non-Gaussian intensity distribution,

at least partially melting the nanoparticles of the deposited drops in said curing point while moving said substrate in respect to said curing point to form a line strip of said material.

28. The method of claim 27 wherein the intensity distribution has at least two spatially separated maxima.

29. A method for producing a structure on a substrate comprising the steps of

depositing a layer of a suspension of nanoparticles of a material in a liquid onto said substrate,

illuminating a curing point on said substrate by pulsed laser light, and

at least partially melting the nanoparticles of the deposited drops in said curing point.

30. A structure produced by the method of claim 1 or 26 or 27 or 29.

31. A device for producing a structure on a substrate comprising

a droplet generator for drops of a suspension of nanoparticles of a material in a liquid, said droplet generator adapted for being directed onto a substrate and

a laser source with imaging means adapted for being directed to said substrate.

32. The device of claim 31 wherein said laser source generates laser light with a non-Gaussian intensity distribution having at least two spatially separated intensity maxima.

33. The device of claim 31 wherein said laser source generates pulsed light.

34. The device of claim 31 comprising a printing head holding at least part of said droplet generator and at least part of said light source.